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ATTY DOCKET #: 2000\_1326

Due Date: February 28, 2004

Confirmation No. 2601

OUR REF: 2000\_1326/JRF/00177

Applicant: Mitsuaki OSHIMA et al.

Serial No.: 09/669,916

Filing Date: September 25, 2000

Title: COMMUNICATION SYSTEM

Receipt of the following papers is acknowledged:

Response

COPY OF ALLOWED CLAIMS OF APPLICATION 09/653482

COPY OF ALLOWED CLAIMS OF APPLICATION 09/698367

COPY OF ALLOWED CLAIMS OF APPLICATION 09/740068

COPY OF DISCLAIMER FILED IN U.S. PATENT 6,555,275



Date: February 10, 2004

Attorney: JRF/fs

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Confirmation No. 2601**  
Mitsuaki OSHIMA et al. : Docket No. 2000\_1326  
Serial No. 09/669,916 : Group Art Unit 2634  
Filed September 25, 2000 : Examiner A. Le  
COMMUNICATION SYSTEM :

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**RESPONSE**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

THE COMMISSIONER IS AUTHORIZED  
TO CHARGE ANY DEFICIENCY IN THE  
FEES FOR THIS PAPER TO DEPOSIT  
ACCOUNT NO. 23-0875

Sir:

In the outstanding Office Action, claims 31-38 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4 and 6 of U.S. Patent No. 5,555,275, and claims 2 and 3 of U.S. Patent No. 5,802,241. It is submitted that these rejections are overcome for the following reasons.

Several reissue patent applications of U.S. Patent No. 5,802,241 have been filed and are now allowed. Thus, as required, the Patentee surrendered U.S. Patent No. 5,802,241 on November 22, 2002 in reissue application 09/740,068. Moreover, it is submitted that there is no obviousness-type double patenting between the claims of the present application and the claims of any of the allowed reissue applications of U.S. Patent No. 5,802,241.

For the Examiner's convenience, a copy of the allowed claims in the three allowed reissue applications of U.S. Patent No. 5,802,241 are attached. The serial number of the three allowed reissue applications are 09/653,482, 09/698,367, and 09/740,068.

In light of the Patentee's surrender of U.S. Patent No. 5,802,241, and the dissimilarity between the claims of the allowed reissue applications of U.S. Patent No. 5,802,241 and the claims of the present application, it is submitted that claims 31-38 of the present application are

allowable over U.S. Patent No 5,802,241 and the allowed reissue applications 09/653,482, 09/698,367, and 09/740,068.

With respect to U.S. Patent 5,555,275, it is noted that the Patentee has filed a Disclaimer under 37 C.F.R. 1.321(a) disclaiming claims 4 and 6 of said patent. A copy of the Disclaimer filed in U.S. Patent 5,555,275 is attached for the Examiner's consideration. Thus, it is submitted that the obviousness-type double patenting rejection over claims 4 and 6 of U.S. Patent No. 5,555,275 has been overcome.

In item 3 on page 2 of the Office Action, the Examiner indicated that claims 31-38 would be allowable if the double patenting rejections are overcome. In view of the above comments, it is submitted that the double patenting rejections have been overcome. Therefore, claims 31-38 should now be allowed.

The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

Mitsuaki OSHIMA et al.

By: 

Jeffrey R. Filipek  
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February 10, 2004

COPY OF ALLOWED CLAIMS OF  
APPLICATION SERIAL NO.

09/653,482

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Confirmation No. 4654**  
Mitsuaki OSHIMA : **Docket No. 2000\_1185**  
Serial No. 09/653,482 : **Group Art Unit 2615**  
Filed August 31, 2000 : **Examiner R. Chevalier**  
COMMUNICATION SYSTEM :

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**SUPPLEMENTAL AMENDMENT**

Assistant Commissioner for Patents,  
Washington, D.C.

Sir:

This amendment is supplemental to the amendment filed July 26, 2002. Please amend the above-identified U.S. patent application as follows:

**IN THE CLAIMS:**

Please amend claims 12-17 as follows.

12. (Amended) A signal transmission system comprising a transmission apparatus and a receiving apparatus,

said transmission apparatus comprising:

a trellis encoder operable to encode a source signal to produce an encoded signal;

a modulator operable to modulate the encoded signal to produce an 8-level VSB modulated signal; and

a transmitter operable to transmit the 8-level VSB modulated signal in a 6MHz bandwidth;

said receiving apparatus comprising:

a receiver operable to receive the transmitted 8-level VSB modulated signal;

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a demodulator operable to demodulate the 8-level VSB modulated signal,  
received by said receiver, to produce a demodulated signal; and  
a trellis decoder operable to decode the demodulated signal to produce the source  
signal,  
wherein a code rate of said trellis encoder is 2/3 and a code rate of said trellis decoder  
is 2/3.

13. (Amended) A signal transmission apparatus comprising:

a trellis encoder operable to encode a source signal to produce an encoded signal;  
a modulator operable to modulate the encoded signal to produce an 8-level VSB  
modulated signal; and  
a transmitter operable to transmit the 8-level VSB modulated signal in a 6MHz  
bandwidth,  
wherein a code rate of said trellis encoder is 2/3.

14. (Amended) A signal receiving apparatus comprising:

a receiver operable to receive an 8-level VSB modulated signal, having information  
of a source signal, transmitted in a 6 MHz bandwidth;  
a demodulator operable to demodulate the 8-level VSB modulated signal, received  
by said receiver, to produce a demodulated signal; and  
a trellis decoder operable to decode the demodulated signal to produce the source  
signal,  
wherein a code rate of said trellis decoder is 2/3.

15. (Amended) A signal transmission and receiving method comprising:

trellis encoding a source signal to produce an encoded signal;  
modulating the encoded signal to produce an 8-level VSB modulated signal;  
transmitting the 8-level VSB modulated signal in a 6 MHz bandwidth;

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receiving the transmitted 8-level VSB modulated signal;  
demodulating the 8-level VSB modulated signal, received in said receiving, to produce a  
demodulated signal; and  
trellis decoding the demodulated signal to produce the source signal,  
wherein a code rate of said trellis encoding is  $2/3$  and a code rate of said trellis decoding is  
 $2/3$ .

16. (Amended) A signal transmission method comprising:  
trellis encoding a source signal to produce an encoded signal;  
modulating the encoded signal to produce an 8-level VSB modulated signal; and  
transmitting the 8-level VSB modulated signal in a 6 MHz bandwidth,  
wherein a code rate of said trellis encoding is  $2/3$ .
17. (Amended) A signal receiving method comprising:  
receiving an 8-level VSB modulated signal, having information of a source  
signal, transmitted in a 6 MHz bandwidth;  
demodulating the 8-level VSB modulated signal, received in said receiving,  
to produce a demodulated signal; and  
trellis decoding the demodulated signal to produce the source signal,  
wherein a code rate of said trellis decoding is  $2/3$ .

**COPY OF ALLOWED CLAIMS OF  
APPLICATION SERIAL NO.**

**09/698,367**

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **ATTN: BOX RCE**  
Mitsuaki OSHIMA : Docket No. 2000\_1500  
Serial No. 09/698,367 : Group Art Unit 2615  
Filed October 30, 2000 : Examiner R. Chevalier  
COMMUNICATION SYSTEM : **Confirmation No. 5101**

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**AMENDMENT**

Assistant Commissioner for Patents,  
Washington, D.C.

Sir:

In response to the Office Action of May 20, 2002, please amend the above-identified U.S. patent application as follows:

**IN THE CLAIMS:**

**Please cancel claims 6-17 without prejudice or disclaimer to the subject matter therein.**

**Also, please add new claims 18-29 as follows.**

**18. A transmission apparatus comprising:**

**a modulator operable to modulate a first data stream to produce an n-level VSB modulated signal, where n is an integer less than 8, and a second data stream to produce an 8-level VSB modulated signal; and**

**a transmitter operable to transmit the n-level VSB modulated signal and the 8-level VSB modulated signal in a 6MHz bandwidth.**

**19. A transmission apparatus according to claim 18, further comprising a multiplexer operable to time division multiplex the n-level VSB modulated signal and the 8-level VSB modulated signal.**

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20. A receiving apparatus comprising:

a receiver operable to receive an n-level VSB modulated signal having information of a first data stream and an 8-level VSB modulated signal having information of a second data stream, where n is an integer less than 8, transmitted in a 6MHz bandwidth; and

a demodulator operable to demodulate the n-level VSB modulated signal and the 8-level VSB modulated signal, which are received by said receiver.

21. A receiving apparatus according to claim 20, wherein the n-level VSB modulated signal and the 8-level VSB modulated signal received by said receiver are time division multiplexed.

22. A signal transmission system comprising:

a transmission apparatus comprising:

a modulator operable to modulate a first data stream to produce an n-level VSB modulated signal, where n is an integer less than 8, and a second data stream to produce an 8-level VSB modulated signal, and

a transmitter operable to transmit the n-level VSB modulated signal and the 8-level VSB modulated signal in a 6MHz bandwidth; and

a receiving apparatus comprising:

a receiver operable to receive the n-level VSB modulated signal and the 8-level VSB modulated signal, and

a demodulator operable to demodulate the n-level VSB modulated signal and the 8-level VSB modulated signal, which are received by said receiver.

23. A transmission system according to claim 22, wherein said transmission apparatus further comprises a multiplexer operable to time division multiplex the n-level VSB modulated signal and the 8-level VSB modulated signal.

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24. A transmission method comprising:  
modulating a first data stream to produce an n-level VSB modulated signal, where n is an integer less than 8, and a second data stream to produce an 8-level VSB modulated signal; and  
transmitting the n-level VSB modulated signal and the 8-level VSB modulated signal in a 6MHz bandwidth.
25. A transmission method according to claim 24, further comprising time division multiplexing the n-level VSB modulated signal and the 8-level VSB modulated signal.
26. A receiving method comprising:  
receiving an n-level VSB modulated signal having information of a first data stream and an 8-level VSB modulated signal having information of a second data stream, where n is an integer less than 8, transmitted in a 6MHz bandwidth; and  
demodulating the n-level VSB modulated signal and the 8-level VSB modulated signal, which are received in said receiving.
27. A receiving method according to claim 26, wherein the n-level VSB modulated signal and the 8-level VSB modulated signal to be received in said receiving are time division multiplexed.
28. A transmission and receiving method comprising:  
modulating a first data stream to produce an n-level VSB modulated signal, where n is an integer less than 8, and a second data stream to produce an 8-level VSB modulated signal;  
transmitting the n-level VSB modulated signal and the 8-level VSB modulated signal in a 6MHz bandwidth;  
receiving the n-level VSB modulated signal and the 8-level VSB modulated signal; and  
demodulating the n-level VSB modulated signal and the 8-level VSB modulated signal, which are received in said receiving.

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29. A transmission and receiving method according to claim 28, further comprising time division multiplexing the n-level VSB modulated signal and the 8-level VSB modulated signal.

COPY OF ALLOWED CLAIMS OF  
APPLICATION SERIAL NO.

09/740,068

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue Application of : **Attn: BOX REISSUE**  
U.S. Patent No. 5,802,241 : **Atty. Docket No. 2000\_1727**  
Issued September 1, 1998 :  
Mitsuaki OSHIMA :  
Serial No. NEW :  
Filed December 20, 2000 :  
COMMUNICATION SYSTEM :  
(Reissue Divisional  
of Serial No. 09/653,482,  
Filed August 31, 2000)

### PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

Please amend the above-identified application as follows.

#### IN THE SPECIFICATION:

Page 1, after the title of the invention, insert the following paragraph:

--This is a reissue application of U.S. Patent No. 5,802,241, issued September 1, 1998, and a divisional application of reissue application No. 09/653,482, filed August 31, 2000, which is also a reissue application of U.S. Patent No. 5,802,241, issued September 1, 1998.--

#### IN THE CLAIMS:

Please cancel claims 1-5 without prejudice or disclaimer to the subject matter therein. Please add new claims 6-10 as follows.

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--6. A signal transmission apparatus comprising:

a modulator operable to assign and interleave a data stream of a layer A and a data stream of a layer B to a respective constellation in a signal space to produce a modulated signal of the layer A and a modulated signal of the layer B;

an inverse fast Fourier transformer operable to convert the modulated signal of the layer A into a transmission signal on a time axis in the layer A and to convert the modulated signal of the layer B into a transmission signal on a time axis in the layer B, wherein each transmission signal comprises an effective symbol signal and a guard interval signal, and a period of the guard interval signal in the layer A is larger than the period of the guard interval signal in the layer B; and

a transmitter operable to transmit the transmission signals.

7. A signal receiving apparatus for use in receiving a modulation signal in a layer A and a modulation signal in a layer B, wherein the modulation signals each include a guard interval signal, said apparatus comprising:

a fast-Fourier transformer operable to convert the modulation signal in the layer A into a converted signal on a frequency axis in the layer A and to convert the modulation signal in the layer B into a converted signal on a frequency axis in the layer B; and

a demodulator operable to de-interleave the converted signals, demodulate the converted signal in the layer A into a data stream of the layer A and to demodulate the converted signal in the layer B into a data stream of the layer B;

wherein a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B.

8. A signal transmission system comprising:

a signal transmission apparatus including

a modulator operable to assign and interleave a data stream of a layer A and a data stream of a layer B to a respective constellation in a signal space to produce a modulated signal of the layer A and a modulated signal of the layer B,

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an inverse fast Fourier transformer operable to convert the modulated signal of the layer A into a transmission signal on a time axis in the layer A and to convert the modulated signal of the layer B into a transmission signal on a time axis in the layer B, wherein each transmission signal comprises an effective symbol signal and a guard interval signal, and a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B, and

a transmitter operable to transmit the transmission signals; and  
a signal receiving apparatus including

a receiver operable to receive the transmission signal in the layer A and the transmission signal in the layer B,

a fast-Fourier transformer operable to convert the transmission signal in the layer A into a converted signal on a frequency axis in the layer A and to convert the transmission signal in the layer B into a converted signal on a frequency axis in the layer B, and

a demodulator operable to de-interleave the transmission signals, demodulate the converted signal in the layer A into a data stream of the layer A and to demodulate the converted signal in the layer B into a data stream of the layer B.

9. A signal transmission method comprising:

assigning and interleaving a data stream of a layer A and a data stream of a layer B to a respective constellation in a signal space to produce a modulated signal of the layer A and a modulated signal of the layer B;

inverse fast Fourier transforming the modulated signal of the layer A into a transmission signal on a time axis in the layer A and inverse fast Fourier transforming the modulated signal of the layer B into a transmission signal on a time axis in the layer B, wherein each transmission signal comprises an effective symbol signal and a guard interval signal, and a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B; and

transmitting the transmission signals.

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10. A signal receiving method for use in receiving a modulation signal in a layer A and a modulation signal in a layer B, wherein the modulation signals each include a guard interval signal, and a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B, said method comprising:

fast-Fourier transforming the modulation signal in the layer A into a converted signal on a frequency axis in the layer A and fast-Fourier transforming the modulation signal in the layer B into a converted signal on a frequency axis in the layer B; and

de-interleaving the modulation signals, demodulating the converted signal in the layer A into a data stream of the layer A and demodulating the converted signal in the layer B into a data stream of the layer B. -

COPY OF DISCLAIMER FILED IN  
US PATENT NO. 5,555,275

**COPY**

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of

Mitsuaki OSHIMA

Patent No. 5,555,275

Issued September 10, 1996

Multi-Threshold And Hierarchical  
Television Signal Transmission System**DISCLAIMER IN PATENT UNDER 37 CFR 1.321(a)**Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450


Sir:

The undersigned, who is empowered to act on behalf of the actual assignee of the above-referenced Patent, represents that the assignee is the owner of the entire right, title and interest in said Patent as evidenced by the assignment executed by the inventor in U.S. Patent Application No. 07/857,627, now U.S. Patent No. 5,555,275 and recorded on March 25, 1992 at Reel 6074 Frame 0726 in favor of Matsushita Electric Industrial Co., Ltd., and hereby disclaims claims 4 and 6 of said U.S. Patent 5,555,275.

Respectfully submitted,

Isamu Shimura  
Director, IP Development Center  
Authorized Signing Officer

Name and Title of Authorized Person



Signature

February 3, 2004

Date